2. (Canceled)

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12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. An apparatus for processing a microelectronic workpiece in a process chamber configured to contain a process fluid, the process chamber having an electrode support configured to support an electrode at a first position within the process chamber, the process chamber further having a microelectronic workpiece support configured to support a microelectronic workpiece at a second position spaced apart from the first position, the apparatus comprising:

a diffusion plate member configured to be positioned between the first position and the second position, the diffusion plate member having a first surface facing toward the first position, a second surface facing toward the second position, and a plurality of openings extending through the diffusion plate member from the first surface to the second surface, the openings being arranged in at least one spiral pattern, at least one of the diffusion plate member and the microelectronic workpiece support being rotatable relative to the other.

18. The apparatus of claim 17 wherein the plurality of openings includes a plurality of elongated curved slots spaced apart from each other along a spiral path.

19. The apparatus of claim 17 wherein the plurality of openings are aligned along a single spiral path extending radially and circumferentially from a central portion of the diffusion plate member toward an outer portion of the diffusion plate member.

20. The apparatus of claim 17, further comprising a diffusion plate support configured to support the diffusion plate member in the process chamber, and wherein the diffusion plate support has a plurality of mounting locations, each configured to support the diffusion plate member at a different position between the first position and the second position.

21. The apparatus of claim 17 wherein the diffusion plate member has an edge surface between the first surface and the second surface, and wherein the apparatus further comprises a diffusion plate support configured to support the diffusion plate member

in the process chamber, and wherein the diffusion plate support has a plurality of grooves with each groove configured to support the diffusion plate member at a different position between the first position and the second position.

22. The apparatus of claim 17 wherein the diffusion plate member has generally circular first and second surfaces, and an edge surface between the first surface and the second surface, the edge surface being rounded convexly outwardly away from the first and second surfaces, and wherein the apparatus further comprises a diffusion plate support configured to support the diffusion plate member in the process chamber, and further wherein the diffusion plate support has a plurality of grooves with each groove being rounded concavely to receive and support the diffusion plate member at a different position between the first position and the second position.

23. The apparatus of claim 17, further comprising a diffusion plate support configured to support the diffusion plate member in the process chamber, and wherein the diffusion plate support has a first rim portion extending upwardly from the diffusion plate member, the diffusion plate support further having a second rim portion extending radially inwardly from the first rim portion above the diffusion plate member, the second rim portion having a plurality of recesses configured to receive corresponding hook portions of a tool to remove the diffusion plate support from the process chamber.

24. The apparatus of claim 17, further comprising:

the electrode support configured to support the electrode in the first position, the electrode support having a shield portion configured to be adjacent to a lower surface of the electrode, the electrode support further having brackets extending upwardly from the shield portion, the brackets having first interengaging parts; and

a diffusion plate support configured to support the diffusion plate member in the process chamber, and wherein the diffusion plate support has second interengaging parts configured to releasably engage the first interengaging parts upon relative rotation of at least

one of the diffusion plate support and the electrode support relative to the other through an angle of less than 360 degrees.

25. The apparatus of claim 17, further comprising:

the electrode support configured to support the electrode in the first position, the electrode support having a shield portion configured to be adjacent to a lower surface of the electrode, the electrode support further having a plurality of brackets extending upwardly from the shield portion, with each bracket having a radially extending tab; and

a diffusion plate support configured to support the diffusion plate member in the process chamber, and wherein the diffusion plate support has a plurality of circumferentially extending channel portions, each channel portion having an axial opening configured to receive one of the tabs of the electrode support, each channel portion being configured to at least restrict relative axial motion of the diffusion plate support relative to the electrode support upon relative rotation of at least one of the diffusion plate support and the electrode support relative to the other through an angle of less than 360 degrees while the tabs are received in the channel portions.

26. The apparatus of claim 17, further comprising the process chamber.

27. The apparatus of claim 17, further comprising the process chamber, and wherein the process chamber includes a second vessel disposed inwardly from a first vessel, the second vessel having an upper edge defining a weir over which the process fluid flows into the first vessel, further wherein the electrode is disposed within the first vessel.

28. A process chamber for processing a microelectronic workpiece, comprising:

a first vessel;

a second vessel disposed inwardly from the first vessel and configured to hold a process fluid, the second vessel having an upper edge defining a weir over which the process fluid can flow into the first vessel;

an electrode support configured to support an electrode at a first position within the second vessel;

a microelectronic workpiece support positioned proximate to the second vessel to support a microelectronic workpiece at a second position spaced apart from the first position; and

a diffusion plate member positioned between the first position and the second position, the diffusion plate member having a first surface facing toward the first position, a second surface facing toward the second position, and a plurality of openings extending through the diffusion plate member from the first surface to the second surface, the openings being arranged in at least one spiral pattern, at least one of the diffusion plate member and the microelectronic workpiece support being rotatable relative to the other.

29. The apparatus of claim 28 wherein the plurality of openings includes a plurality of elongated curved slots spaced apart from each other along a spiral path.

30. The apparatus of claim 28 wherein the openings are aligned along a single spiral path extending radially and circumferentially from a central portion of the diffusion plate member toward an outer portion of the diffusion plate member.

31. The apparatus of claim 28, further comprising a diffusion plate support configured to support the diffusion plate member in the cup, and wherein the diffusion plate support has a plurality of mounting locations, each configured to support the diffusion plate member at a different position between the first position and the second position.

32. The apparatus of claim 28 wherein the diffusion plate member has an edge surface between the first surface and the second surface, and wherein the apparatus further comprises a diffusion plate support configured to support the diffusion plate member in the second vessel, and wherein the diffusion plate support has a plurality of grooves with each groove configured to support the diffusion plate member at a different position between the first position and the second position.

33. The apparatus of claim 28 wherein the diffusion plate member has generally circular first and second surfaces, and an edge surface between the first and second surfaces, the edge surface being rounded convexly outwardly away from the first and second surfaces, and wherein the apparatus further comprises a diffusion plate support configured to support the diffusion plate member in the second vessel, and further wherein the diffusion plate support has a plurality of grooves with each groove being rounded concavely to receive and support the diffusion plate member at a different position between the first position and the second position.

34. The apparatus of claim 28, further comprising a diffusion plate support configured to support the diffusion plate member in the second vessel, and wherein the diffusion plate support has a first rim portion extending upwardly from the diffusion plate member, the diffusion plate support further having a second rim portion extending radially inwardly from the first rim portion above the diffusion plate member, the second rim portion having a plurality of recesses configured to receive corresponding hook portions of a tool to remove the diffusion plate support from the process chamber.

35. The apparatus of claim 28 wherein the electrode support has a shield portion configured to be adjacent to a lower surface of the electrode, the electrode support further having brackets extending upwardly from the shield portion, the brackets having first interengaging parts, and wherein the apparatus further comprises a diffusion plate support configured to support the diffusion plate member in the second vessel, and wherein the diffusion plate support has second interengaging parts configured to releasably engage the first interengaging parts upon relative rotation of at least one of the diffusion plate support and the electrode support relative to the other through an angle of less than 360 degrees.

36. The apparatus of claim 28 wherein the electrode support has a shield portion configured to be adjacent to a lower surface of the electrode, the electrode support further having a plurality of brackets extending upwardly from the shield portion, with each

bracket having a radially extending tab, and wherein the apparatus further comprises a diffusion plate support configured to support the diffusion plate member in the process chamber, and wherein the diffusion plate support has a plurality of circumferentially extending channel portions, each channel portion having an axial opening configured to receive one of the tabs of the electrode support, each channel portion being configured to at least restrict relative axial motion of the diffusion plate support relative to the electrode support upon relative rotation of at least one of the diffusion plate support and the electrode support relative to the other through an angle of less than 360 degrees while the tabs are received in the channel portions.

37. (Amended) A method for processing a microelectronic workpiece, comprising:

providing a vessel having a first electrode and a diffusion plate member;

coupling a second electrode to the microelectronic workpiece;

disposing the microelectronic workpiece in the vessel with the diffusion plate member between the first electrode and the microelectronic workpiece;

directing a flow of processing fluid toward the microelectronic workpiece through a plurality of openings in the diffusion plate member, the openings being arranged along a spiral path; and

rotating at least one of the diffusion plate member and the microelectronic workpiece relative to the other while directing the flow of processing fluid through the openings in the diffusion plate member.

38. The method of claim 37 wherein directing the flow of processing fluid includes directing the flow through a plurality of elongated curved slots spaced apart from each other along the spiral path.

39. The method of claim 37 wherein directing the flow of processing fluid includes directing the flow through a plurality of openings aligned along a single spiral path

extending radially and circumferentially from a central portion of the diffusion plate member toward an outer portion of the diffusion plate member.

40. The method of claim 37, further comprising supporting the diffusion plate member relative to the first electrode on one of a plurality of mounting locations of a diffusion plate support, with each mounting location configured to support the diffusion plate member at a different position between the first electrode and the microelectronic workpiece.

41. The method of claim 37 wherein the diffusion plate member has a first surface, a second surface facing opposite the first surface, and an edge surface between the first and second surfaces, and wherein the method further comprises selecting one of a plurality of positions between the first electrode and the microelectronic workpiece and supporting the diffusion plate member at the one position by engaging the diffusion plate member with one of a plurality of grooves of a diffusion plate support disposed in the vessel.

42. The method of claim 37 wherein the diffusion plate member has a first surface, a second surface facing opposite the first surface, and an edge surface between the first and second surfaces, the edge surface being rounded convexly outwardly away from the first and second surfaces, and wherein the method further comprises selecting one of a plurality of positions between the first electrode and the microelectronic workpiece and supporting the diffusion plate member at the one position by disposing the edge of the diffusion plate member with one of a plurality of concavely rounded grooves of a diffusion plate support disposed in the vessel.

43. The method of claim 37 wherein the diffusion plate member is supported with a diffusion plate support having a first rim portion extending upwardly from the diffusion plate member, the diffusion plate support further having a second rim portion

extending radially inwardly from the first rim portion above the diffusion plate member, the second rim portion having a plurality of recesses, and wherein the method further comprises engaging hook portions of a tool with the recesses of the diffusion plate support to remove the diffusion plate support and the diffusion plate member from the vessel.

44. The method of claim 37 wherein the diffusion plate member is connected to a diffusion plate support, and wherein the method further comprises:

carrying the first electrode with an electrode support having a shield portion configured to be adjacent to a lower surface of the first electrode, the electrode support further having a plurality of brackets extending upwardly from the shield portion, with each bracket having a radially extending tab; and

engaging the diffusion plate support with the electrode support by inserting the tabs of the electrode support into corresponding axial openings of the diffusion plate support and rotating at least one of the electrode support and the diffusion plate support relative to the other through an angle of less than 360 degrees to move the tabs into circumferential channel portions adjacent to the axial openings of the electrode support.